

Appl. No. 10/798,670  
Reply to Office Action of December 27, 2004

Attorney Docket No. 2002.1054/24061.498  
Customer No. 42717

**Amendments To The Claims**

The following list of the claims replaces all prior versions and lists of the claims in this application.

1. (Currently amended) A manufacturing equipment scheduling system for controlling run sequences of product lots to minimize low utilization rates of units of manufacturing processing equipment employed in fabricating said product lots, comprising:

a product lot sequence controller in communication with a product lot dispatch system to receive priority information of the product lots dispatched for fabrication, and in communication with an operations controller to establish an order in which said product lots are processed by units of said processing equipment, said product lot sequence controller establishing said order by performing the steps of:

receiving a dispatch order for at least one current product lot,

determining a priority of said current product lot,

if said current product lot has a high priority, determining if a previous product lot remains in a selected unit of said processing equipment,

if said previous product lot remains in the selected unit of processing equipment, determining if said previous product lot is has a normal priority,

if said previous product lot has a normal priority, removing said previous product lot from said selected unit of processing equipment,

processing the current product lot with the high priority; and

upon completion of processing said current product lot with high priority, continuing processing the previous product lot.

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2. (Currently amended) The manufacturing equipment scheduling system of claim 1 wherein the product lot sequence controller further ~~establishing~~ establishes said order by performing the steps of:

if said current product lot has the normal priority, determining if the previous product lot remains in the selected unit of processing equipment;

if said previous product lot remains in the selected unit of processing equipment, continuing processing said previous product lot to completion; and

processing the current product lot with the normal priority.

3. (Currently amended) The manufacturing equipment scheduling system of claim 1 wherein the product lot sequence controller further ~~establishing~~ establishes said order by performing the steps of:

~~if said current product lot has the high priority, determining if the previous product lot remains in the selected unit of processing equipment;~~

if said previous product lot remains in the selected unit of processing equipment, determining if said previous product lot has a high priority;

if said previous product lot has the high priority, continuing processing said previous product lot in said selected unit of processing equipment; and

upon completion of processing said previous product lot, processing the current product lot.

4. (Currently amended) The manufacturing equipment scheduling system of claim 1 wherein performing the step of removing said previous product lot from said selected unit of processing equipment includes the steps of:

commanding said selected unit of processing equipment to cease processing said previous product lot;

recording status information of all pieces of product within said previous product lot, and

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requesting said selected unit of processing equipment to return said previous product lot to a staging location.

5. (Currently amended) The manufacturing equipment scheduling system of ~~claim 1~~ claim 4 wherein performing the step of continuing processing the previous product lot includes the steps of:

examining the status information of all pieces of product within said previous product lot, requesting said selected unit of processing equipment to acquire said previous product lot from the staging location; and  
commanding said selected unit of processing equipment to continue processing said previous product lot.

6. (Currently amended) The manufacturing equipment scheduling system of claim 1 further comprising:

a messaging facility connected to communicate messages between said product lot sequence controller, said units of said processing equipment, and said product lot dispatch system.

7. (Original) The manufacturing equipment scheduling system of claim 1 wherein said product lots are integrated circuit substrates and said units of said processing equipment are integrated circuit fabrication equipment.

8. (Currently amended) A method for scheduling manufacturing equipment to control run sequences of product lots to minimize low utilization rates of units of manufacturing processing equipment employed in fabricating said product lots, comprising:

communicating with a product lot dispatch system to receive priority information of the product lots dispatched for fabrication;

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communicating with an operations controller to establish an order in which said product lots are processed by units of said processing equipment; and  
establishing said order by performing the steps of:  
receiving a dispatch order for at least one current product lot,  
determining a priority of said current product lot,  
if said current product lot has a high priority, determining if a previous product lot remains in a selected unit of said processing equipment,  
if said previous product lot remains in the selected unit of processing equipment,  
determining if said previous product lot is has a normal priority;  
if said previous product lot has a normal priority, removing said previous product lot from said selected unit of processing equipment,  
processing the current product lot with the high priority; and  
upon completion of processing said current product lot with high priority, continuing processing the previous product lot.

9. (Currently amended) The method of claim 8 wherein establishing said order further performs the steps of:

if said current product lot has the normal priority, determining if the previous product lot remains in the selected unit of processing equipment;  
if said previous product lot remains in the selected unit of processing equipment,  
continuing processing said previous product lot to completion; and  
processing the current product lot with the normal priority.

10. (Currently amended) The method of claim 8 wherein establishing said order further performs the steps of:

~~if said current product lot has the high priority, determining if the previous product lot remains in the selected unit of processing equipment;~~

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if said previous product lot remains in the selected unit of processing equipment,  
determining if said previous product lot has a high priority;  
if said previous product lot has the high priority, continuing processing said previous  
product lot in said selected unit of processing equipment; and  
upon completion of processing said previous product lot, processing the current product  
lot.

11. (Currently amended) The method of claim 8 wherein performing the step of  
removing said previous product lot from said selected unit of processing equipment includes the  
steps of:

commanding said selected unit of processing equipment to cease processing said previous  
product lot;  
recording status information of all pieces of product within said previous product lot, and  
requesting said selected unit of processing equipment to return said previous product lot  
to a staging location.

12. (Currently amended) The method of ~~claim 8~~ claim 11 wherein performing the step of  
continuing processing the previous product lot includes the steps of:

examining ~~the~~ status information of all pieces of product within said previous product lot,  
requesting said selected unit of processing equipment to acquire said previous product lot  
from the staging location; and  
commanding said selected unit of processing equipment to continue processing said  
previous product lot.

13. (Original) The method of claim 8 wherein communicating with a product lot  
dispatch system is performed by the step of:

transferring messages to and from said product lot dispatch system.

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14. (Currently amended) The method of claim 8 wherein communicating with an operations controller is performed by the step of:  
transferring messages to and from said operations controller.

15. (Original) The method of claim 8 wherein said product lots are integrated circuit substrates and said units of said processing equipment are integrated circuit fabrication equipment.

16. (Currently amended) An apparatus for scheduling manufacturing equipment to control run sequences of product lots to minimize low utilization rates of units of manufacturing processing equipment employed in fabricating said product lots, comprising:

means for communicating with a product lot dispatch system to receive priority information of the product lots dispatched for fabrication;

means for communicating with an operations controller to establish an order in which said product lots are processed by units of said processing equipment; and

means for establishing said order including:

means for receiving a dispatch order for at least one current product lot,

means for determining a priority of said current product lot,

means for determining if a previous product lot remains in a selected unit of said processing equipment, if said current product lot has a high priority,

means for determining if said previous product lot ~~is~~ has a normal priority, if said previous product lot remains in the selected unit ~~that schedules manufacturing equipment to control run sequences of product lots to minimize low utilization rates of units of manufacturing processing equipment of~~ processing equipment;

means for removing said previous product lot from said selected unit of processing equipment, if said previous product lot has a normal priority,

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processing the current product lot with the high priority, and  
means for continuing processing the previous product lot, upon completion of processing  
said current product lot with high priority.

17. (Currently amended) The apparatus of claim 16 wherein means for establishing said  
order further includes:

means for determining if the previous product lot remains in the selected unit of  
processing equipment, if said current product lot has the normal priority;  
means for continuing processing said previous product lot to completion, if said previous  
product lot remains in the selected unit of processing equipment; and  
means for processing the current product lot with the normal priority.

18. (Currently amended) The apparatus of claim 16 wherein means for establishing said  
order further includes:

~~means for determining if the previous product lot remains in the selected unit of  
processing equipment, if said current product lot has the high priority;~~  
means for determining if said previous product lot has a high ~~priority;~~ priority, if said  
previous product lot remains in the selected unit of processing equipment;  
means for continuing processing said previous product lot in said selected unit of  
processing equipment, if said previous product lot has the high priority; and  
means for processing the current product lot, upon completion of processing said  
previous product lot.

19. (Currently amended) The apparatus of claim 16 wherein means for removing said  
previous product lot from said selected unit of processing equipment comprises:

means for commanding said selected unit of processing equipment to cease processing  
said previous product lot;

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means for recording status information of all pieces of product within said previous product lot, and

means for requesting said selected unit of processing equipment to return said previous product lot to a staging location.

20. (Currently amended) The apparatus of ~~claim 16~~ claim 19 wherein means for continuing processing the previous product lot comprises:

means for examining the status information of all pieces of product within said previous product lot,

means for requesting said selected unit of processing equipment to acquire said previous product lot from the staging location; and

means for commanding said selected unit of processing equipment to continue processing said previous product lot.

21. (Currently amended) The apparatus of claim 16 wherein said means for communicating with a product lot dispatch system comprises:

means for transferring messages to and from said product lot dispatch system.

22. (Currently amended) The apparatus of claim 16 wherein said means for communicating with an operations controller includes:

means for transferring messages to and from said operations controller.

23. (Original) The apparatus of claim 16 wherein said product lots are integrated circuit substrates and said units of said processing equipment are integrated circuit fabrication equipment.



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24. (Currently amended) A computer integrated manufacturing system that executes a program process for controlling run sequences of product lots to minimize low utilization rates of processing equipment manufacturing unit employed in fabricating said product lots, the program process comprising the steps of:

communicating with a product lot dispatch system to receive priority information of the product lots dispatched for fabrication;

communicating with an operations controller to establish an order in which said product lots are processed by units of said processing equipment; and

establishing said order by performing the steps of:

receiving a dispatch order for at least one current product lot,

determining a priority of said current product lot,

if said current product lot has a high priority, determining if a previous product lot remains in a selected unit of said processing equipment,

if said previous product lot remains in the selected unit of processing equipment, determining if said previous product lot is has a normal priority;

if said previous product lot has a normal priority, removing said previous product lot from said selected unit of processing equipment,

processing the current product lot with the high priority; and

upon completion of processing said current product lot with high priority, continuing processing the previous product lot.

25. (Currently amended) The computer integrated manufacturing system of claim 24 wherein the step of said program process for establishing said order further performs the steps of:

if said current product lot has the normal priority, determining if the previous product lot remains in the selected unit of processing equipment;

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if said previous product lot remains in the selected unit of processing equipment,  
continuing processing said previous product lot to completion; and  
processing the current product lot with the normal priority.

26. (Currently amended) The computer integrated manufacturing system of claim 24  
wherein the step of said program process for establishing said order further performs the steps of:  
~~if said current product lot has the high priority, determining if the previous product lot  
remains in the selected unit of processing equipment;~~  
if said previous product lot remains in the selected unit of processing equipment,  
determining if said previous product lot has a high priority;  
if said previous product lot has the high priority, continuing processing said previous  
product lot in said selected unit of processing equipment; and  
upon completion of processing said previous product lot, processing the current product  
lot.

27. (Currently amended) The computer integrated manufacturing system of claim 24  
wherein the step of said program process for performing the step of removing said previous  
product lot from said selected unit of processing equipment includes the steps of:  
commanding said selected unit of processing equipment to cease processing said previous  
product lot;  
recording status information of all pieces of product within said previous product lot, and  
requesting said selected unit of processing equipment to return said previous product lot  
to a staging location.

28. (Currently amended) The computer integrated manufacturing system of ~~claim 24~~  
claim 27 wherein the step of said program process for performing the step of continuing  
processing the previous product includes the steps of:

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examining the status information of all pieces of product within said previous product lot,  
requesting said selected unit of processing equipment to acquire said previous product lot  
from the staging location; and  
commanding said selected unit of processing equipment to continue processing said  
previous product lot.

29. (Currently amended) The computer integrated manufacturing system of claim 24  
wherein the step of said program process for communicating with a product lot dispatch system  
includes the step of:

transferring messages to and from said product lot dispatch system.

30. (Currently amended) The computer integrated manufacturing system of claim 24  
wherein the step of said program process for communicating with an operations controller is  
performed by the step of:

transferring messages to and from said operations controller.

31. (Original) The computer integrated manufacturing system of claim 24 wherein said  
product lots are integrated circuit substrates and said units of said processing equipment are  
integrated circuit fabrication equipment.

32. (Currently amended) A medium for retaining a computer program which, when  
implemented ~~executed~~ by a computing system, implements ~~that executes~~ a program process for  
controlling run sequences of product lots to minimize low utilization rates of units of  
manufacturing processing equipment ~~manufacturing unit~~ employed in fabricating said product  
lots, the program process comprising the steps of:

communicating with a product lot dispatch system to receive priority information of the  
product lots dispatched for fabrication;

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communicating with an operations controller to establish an order in which said product lots are processed by units of said processing equipment; and  
establishing said order by performing the steps of:  
receiving a dispatch order for at least one current product lot,  
determining a priority of said current product lot,  
if said current product lot has a high priority, determining if a previous product lot remains in a selected unit of said processing equipment,  
if said previous product lot remains in the selected unit of processing equipment,  
determining if said previous product lot is has a normal priority;  
if said previous product lot has a normal priority, removing said previous product lot from said selected unit of processing equipment,  
processing the current product lot with the high priority; and  
upon completion of processing said current product lot with high priority, continuing processing the previous product lot.

33. (Currently amended) The medium of claim 32 wherein the step of said program process for establishing said order further performs the steps of:  
if said current product lot has the normal priority, determining if the previous product lot remains in the selected unit of processing equipment;  
if said previous product lot remains in the selected unit of processing equipment, continuing processing said previous product lot to completion; and  
processing the current product lot with the normal priority.

34. (Currently amended) The medium of claim 32 wherein the step of said program process for establishing said order further performs the steps of:  
~~if said current product lot has the high priority, determining if the previous product lot remains in the selected unit of processing equipment;~~

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if said previous product lot remains in the selected unit of processing equipment,  
determining if said previous product lot has a high priority;  
if said previous product lot has the high priority, continuing processing said previous  
product lot in said selected unit of processing equipment; and  
upon completion of processing said previous product lot, processing the current product  
lot.

35. (Currently amended) The medium of claim 32 wherein the step of said program  
process for performing the step of removing said previous product lot from said selected unit of  
processing equipment includes the steps of:

commanding said selected unit of processing equipment to cease processing said previous  
product lot;  
recording status information of all pieces of product within said previous product lot, and  
requesting said selected unit of processing equipment to return said previous product lot  
to a staging location.

36. (Currently amended) The medium of ~~claim 32~~ claim 35 wherein the step of said  
program process for performing the step of continuing processing the previous product lot  
includes the steps of:

examining the status information of all pieces of product within said previous product lot,  
requesting said selected unit of processing equipment to acquire said previous product lot  
from the staging location; and  
commanding said selected unit of processing equipment to continue processing said  
previous product lot.

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37. (Original) The medium of claim 32 wherein the step of said program process for communicating with a product lot dispatch system is performed by the step of:  
transferring messages to and from said product lot dispatch system.

38. (Currently amended) The medium of claim 32 wherein the step of said program process for communicating with an operations controller is performed by the step of:  
transferring messages to and from said operations controller.

39. (Original) The medium of claim 32 wherein said product lots are integrated circuit substrates and said units of said processing equipment are integrated circuit fabrication equipment.